

Total Dissolved Gas Exchange at Bonneville Dam, Columbia River

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The Dissolved Gas Abatement Study was implemented by the US Army Corps of Engineers to define, evaluate, and implement methods to reduce total dissolved gasses created during spillway operations. At the initiation of this program, Bonneville Dam was identified as one of the projects generating the highest levels of total dissolved gas pressures in the region. A series of field investigations were conducted to characterize the baseline total dissolved gas exchange at Ice Harbor Dam. Spillway flow deflectors were identified as an effective means of reducing the absorption of total dissolved gas at Bonneville Dam. The Bonneville spillway deflector design was based on a physical hydraulic model study, in which differing designs were evaluated. The selected deflector design was installed on six of the eighteen spill bays at Bonneville Dam prior to the 2002 spill season. The results of the post-deflector field study will be presented showing a significant reduction in TDG absorption was caused by installation of spillway flow deflectors and the revised spill pattern.